Bridge Inventory & Structural Recommendation Report
For
Bridge Rehabilitation and Deck Replacement Project

Structure F-298; I-80 EB/WB Bridge at Summit Park Interchange

Region: 2	**Project Manager:** Mark Parry
Pin: 6593	**Project Number:** F-I80-4(118)141
FiNet Number: 5260701D	**Fiscal Year:** 2011

Prepared by/Date: Raymond Earl /March 26, 2008
Signature, Director of Bridge Design: **Stan Burns**
Signature, Director of Bridge Operations: **Rukhsana Lindsey**

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REPORT SUMMARY

Scope of Project:

1. Purpose of Report

This report presents a conceptual overview for replacing the decks of structures F-298 a. These structures are on I-80 eastbound and westbound and cross over the County Roads at the Summit Park interchange. This report is intended to convey the need, scope, schedule, budget, safety and quality control process for the structure portion of this project.

2. Project Information

Region: 2 **Route No.:** I-80 **Date:** March 2008

Project Name: I-80; Summit Park Deck Replacement F-298
R.P.: 137.3

Project Number: F-I80-4(118)141 **PIN:** 6593

FiNet: 5260701D

Project Design: Bridge: UDOT Structures Division; Region 2

Project Mgr: Mark Parry

3. Deficiencies & History: (Summarized from Project Inventory Report):

The 2006/2007 inspection report indicates the following:

Bridge	Year Built	Sufficiency Rating	Deck	Super	Sub	Construction History
2F-298	1971	95.0	5	5	6	**1996:** Joint closure. Parapet, beam end, pedestal & abutment repair.
4F-298	1971	66.0	4	4	6	

Deficiencies (includes but are not limited to):

Structure 2F-298: EB I-80 Bridge over County Road at the Summit Park Interchg
As of the Latest Inspection Report (8/14/2007):

- **08/14/2007** Roadway approach and alignment match with speeds. End treatments and shoulder widths adequate for design era but do not meet current standards. Sight distance good.
- **08/14/2007** Heavy salt staining on underside of deck. Asphalt wearing surface in fair condition with no visible potholes. Rating of 4 based on age, history of repairs, extensive chlorides, and health of sister bridge.
- **08/14/2007** Exterior pre-stressed girders have deterioration of beam-ends with visible cracks and spalls from exposure to deicing salts.

- **08/14/2007** Abutments, pedestals and back walls have extensive exposure to deicing salts causing deterioration. Cracks and spalls observed on pedestals, but not significant enough to reduce load capacity.

Structure 4F-298: WB I-80 Bridge over County Road at the Summit Park Interchg As of the Latest Inspection Report (8/14/2007):

- **08/14/2007** The roadway approach, alignment and safety features are adequate for the speeds. Bridge shoulder widths are normal for design era, but less than current standards.
- **08/14/2007** Several large 2-3 ft diameter potholes forming in the asphalt surface of the right - #3 lane on top. Underside of deck has 5% exposed reinforcing steel.
- **08/14/2007** Rating lowered from 5 to 4 based on 2 exterior girders with beam end corrosion and deterioration. Remainder of girders in fair condition.
- **08/14/2007** Heavy salt intrusion at bent caps and abutments. Several pedestals have cracks with corrosion related spalls. However, ability to support loads is not reduced at this time.

4. Plan:

Replace decks on Summit Park bridges utilizing prefabricated deck panels. Perform rehabilitative measures on superstructure. Use temporary structure in median gap for MOT.

5. Work items to be completed:

This project will include the following items

Summit Park (Replace decks)

- Remove Summit Park & Jeremy Ranch bridge decks and replace decks with prefabricated deck panels. Remove and replace existing approach slabs with precast slabs
- Install temporary bridge in median gap for MOT.
- Repair beam end and abutment pedestals on west bound Summit Park structure (4F-298)
- Bridge concrete grinding
- Install sleeper slabs
- Roadway transition
- Electrical work bridges
- Polymer Overlay (Type II or higher)
- Seal Parapets
- Pavement marking paint
- Traffic control utilizing 2 new lanes in median gap
- Coordination with Summit Park communities

6. Work items to be deferred:

This project won't include the following items:

- Roadway and safety items beyond what is related to the bridge replacement.

7. Design Exceptions:

No Design Exceptions are expected.

8. Maintenance Considerations:

Include Region 2 Maintenance Station 2435 in the concept development.

9. Construction Considerations:

Limitations of Operations, Incentives, A+B, CMGC and Design Build will be evaluated. Accelerated bridge construction methods such as prefabricated deck panels and precast approach slabs shall be used in replacing bridge decks. Because of this project sites mountainous environment and higher elevation the project shall start early in the construction season.

10. Risk Analysis:

Project costs increase as risks increase. Partnering between the owner, designers, suppliers, contractors, is the key to success of the project. The use of innovative contracting methods such as design-build, Construction Management General Contractor (CMGC) will be considered.

11. Development Process:

New or Major Reconstruction	x
Rehabilitation	
Preservation	

Schedule of Project:

To get the best quality and bid prices, it is expected that this project needs to be advertised no later than **November 1, 2010**. A tentative schedule is:

1.	Begin Design Phase		2010
2.	Advertisement Date	LATE FALL	2010
3.	Begin Construction	SPRING	2011
4.	Complete Construction	SPRING SUMMER	2011

Budget of Project:

1.	**Funding Source:**	**BR Fund**
2.	**CAA:**	**$ 6,000,000**
3.	**Cost Estimate:**	**$ 5,881,678 (2011 Dollars)**

Summit Park Interchange Structure Replace existing decks with prefabricated deck panels & use temp. bridge for MOT				
ITEM	**QUANTITY**	**UNIT**	**UNIT COST**	**TOTAL COST**
SUMMIT PARK (F-298) STRUCTURAL ITEMS				
Remove bridge deck	20794	SF	$ 15.00	$ 311,905.50
Repl. Ex.Bridge Decks with prefab deck panels	20794	SF	$ 45.00	$ 935,716.49
Temporary structure in Median Gap for MOT	1	LUMP	$ 1,200,000.00	$ 1,200,000.00
Type III Prestressed concrete member (4F-298)	1	EACH	$ 30,000.00	$ 30,000.00
Minor Beam End & Abutment Pedestal Repairs	10	EACH	$ 2,000.00	$ 20,000.00
Remove ex. Appr. Slabs & repl with 25' precast appr. slabs utilizing ABC methods	242	CY	$ 250.00	$ 60,517.71
Install sleeper slabs	45	CY	$ 250.00	$ 11,172.50
Bridge Concrete Grinding	2176	SY	$ 10.00	$ 21,763.74
Polymer Overlay (Type II or higher)	25270	SF	$ 8.00	$ 202,162.95
Parapet Sealing	889	LF	$ 5.00	$ 4,446.60
Electrical Work Bridges	1	LUMP	$ 30,000.00	$ 30,000.00
Bridge Subtotal				**$ 2,827,685.49**
ROADWAY ITEMS FOR ALL STRUCTURES				
Roadway Transitions 150 ft. each end of bridge (2" HMA & 1" OGSC)	679	TON	$ 120.00	$ 81,445.50
Pavement Marking Paint	1	LUMP	$ 10,000.00	$ 10,000.00
Traffic Control	1	LUMP	$ 100,000.00	$ 100,000.00
Mobilization	1	LUMP	$ 400,000.00	$ 400,000.00
Public Information Service	1	LUMP	$ 10,000.00	$ 10,000.00
M.O.T.	1	LUMP	$ 50,000.00	$ 50,000.00
Roadway Subtotal				**$ 651,445.50**
Project Subtotal (2008 Dollars)				**$ 3,479,130.99**
PE/CE 18%				$ 626,243.58
Contigency 20%				$ 695,826.20
Project Total before Inflation				**$ 4,801,200.76**
Inflation Rate @ 7% over 3 years				**$ 1,080,476.62**
Project Total (2011 Dollars)				**$ 5,881,677.39**

Quality Control Process:

Project Management & Team:

This project will include the use of a Project Manager and Team concepts to ensure quality throughout the project. It is recommended that the following areas be represented on this team:

Recommended Team:

Pavement Mgt.	x
Dist. Rep.	x
Materials	x
Traffic & Safety	x
Maintenance	x
Planning	x
Right-of-Way	
Structures	x
Preconst.	x
Construction	x
Environmental	x
Contractor	x

2. Design Process & QC/QA Process:

The design of this project will follow the format of UDOT's "Design Process Manual", and Project Management Process. A Quality Control/Assurance Plan will be developed with assignments for quality control and assurance given to various team members. UDOT's ePM system will be used to maintain project schedule and manage resources. The team members, using a common LAN drive on UDOT's computer system, will manage document control jointly.

3. Reference Manuals, Specifications, and Guidelines:

The following reference manuals, specifications, and guidelines should be used on this project:

UDOT Project Management Guidelines
ePM
AASHTO Bridge Design Guidelines
AASHTO Geometric Design Manual
MUTCD Manual
Roadside Design Manual
UDOT Standard Specifications (CSI), and Standard Drawing

Project Inventory Report

1. Transportation Planning:

Structure Number	**2F-298**	**4F-298**
Original Construction Date	1971	1971
Current Traffic, Level of Service 2002 ADT:	21,513	21,513
Truck Traffic %:	9	9
Predicted 20 Year Traffic, 2022 ADT:	26,138	26,138
Functional Classification:	Rural Interstate	Rural Interstate

2. Public Input:

Public input will address user costs. Input from UDOT maintenance station 2435 is recommended.

3. Roadway Design:

This project will require minor design work from the Region Preconstruction Section, including project management, plan packaging, traffic control, and limitations of operations. UDOT's Structures Division will design the project.

4. Safety:

An "Operational Safety Report" is not expected.

Structure No.	**2F-298**	**4F-298**
Bridge Railings	Substandard	Substandard
Transitions	Substandard	Substandard
Approach Guardrail	Substandard	Substandard
Approach Guardrail Ends	Substandard	Meets Standards
Vertical Clearance Under (minimum)	18.176,	18.077'

5. Materials:

A concrete mix design and testing will be required for all structural concrete. Certifications will be required for all reinforcing and structural steel.

6. Maintenance:

No out of the ordinary maintenance is expected.

7. Environmental:

It is recommended that the environmental process be started early. It is expected that this project will require no more than the "Categorical Exclusion" to address Environmental Issues.

Probable Environmental Classification (I, II, or III): **I**

8. Right of Way:

No Construction Easements are expected.

9. Utilities:

None anticipated at this time.

Appendix

Bridge Inspection & Condition Reports

Location Map